

Bringing Climate Data to East Africa and Beyond

The SERVIR Regional Visualization and Monitoring System



Daniel Irwin
NASA



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ICIMOD



GROUP ON
EARTH OBSERVATIONS



When People Think of NASA...



Goal 3A: Study Earth from space to advance scientific understanding and meet societal needs



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NASA Operating Earth Science Satellites

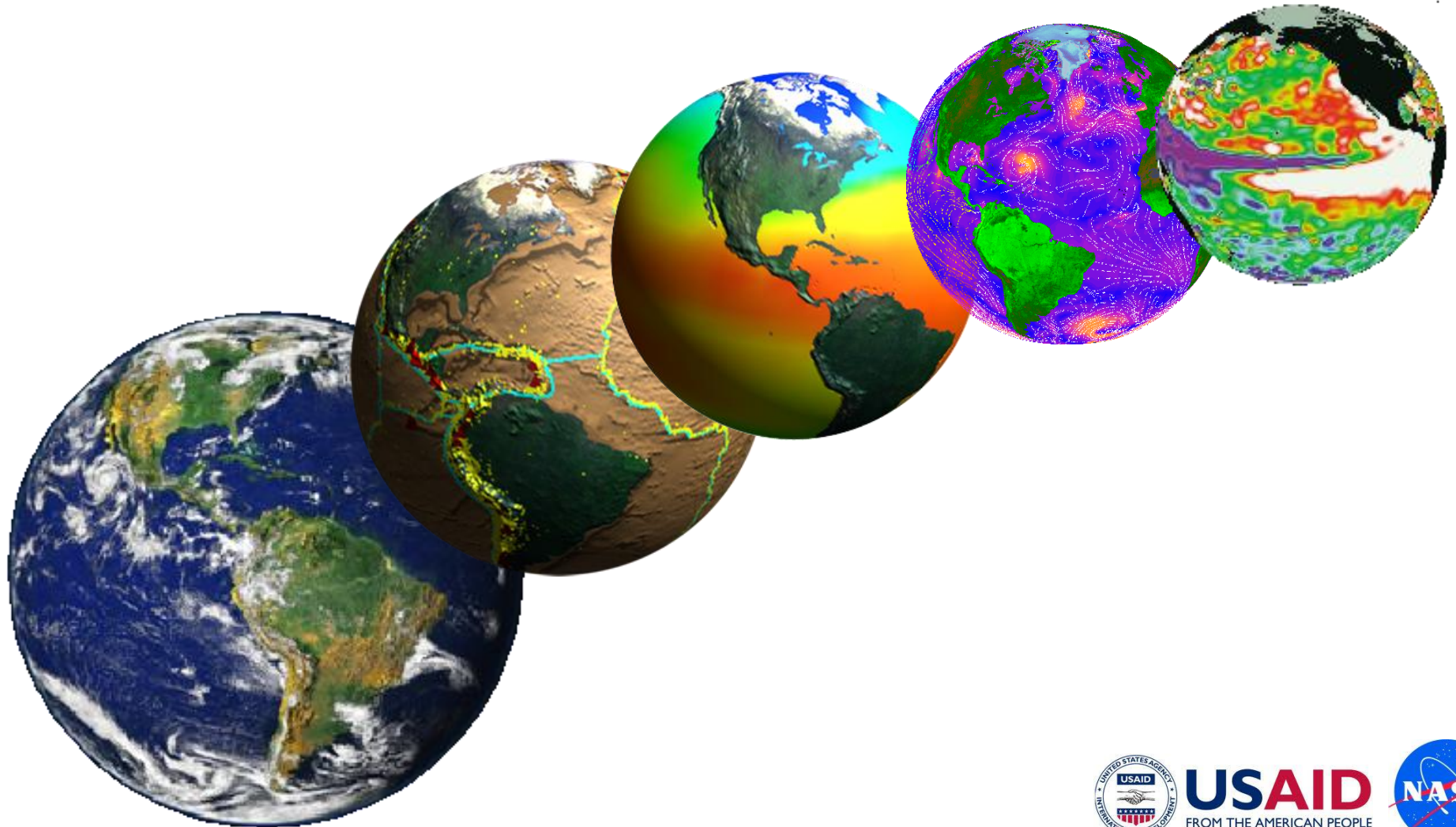


NASA Operating Earth Science Satellites – with International Partners





Pioneering Observations of the Earth

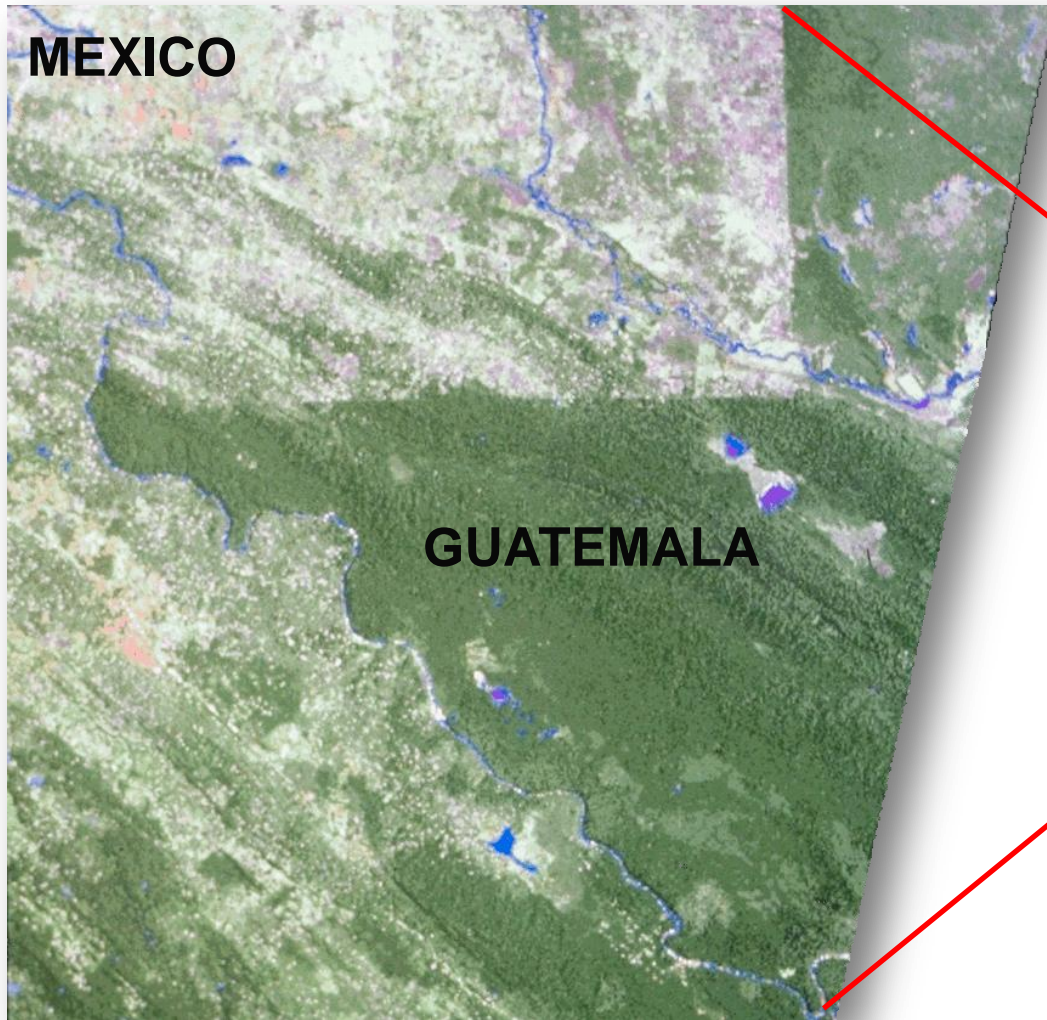


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International Boundary From Space



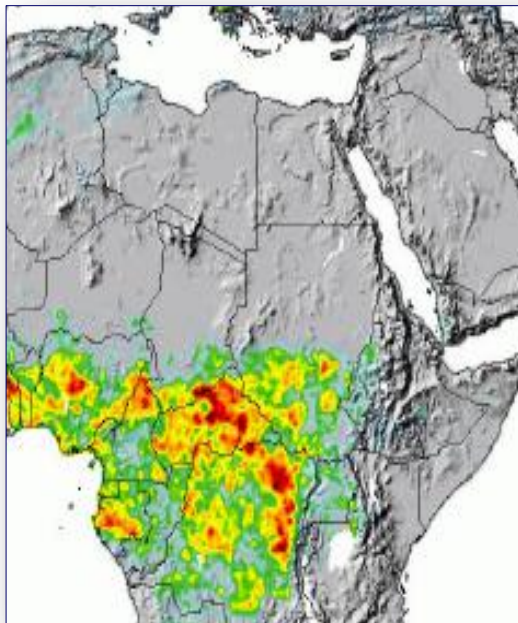
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SERVIR

Strengthen capacity of governments and other key stakeholders to integrate earth observation information and geospatial technologies into development decision-making



Flood Forecasting in Africa



Training and Capacity Building



Mapping Fires in Guatemala Mexico

- Data and Models
- Online Maps
- Visualizations
- Decision Support
- Training
- Partnerships





US Agency for International Development

Science and Technology – renewed focus on integrating science, technology, and innovation in the practice of development to solve today's most pressing development challenges around the globe.

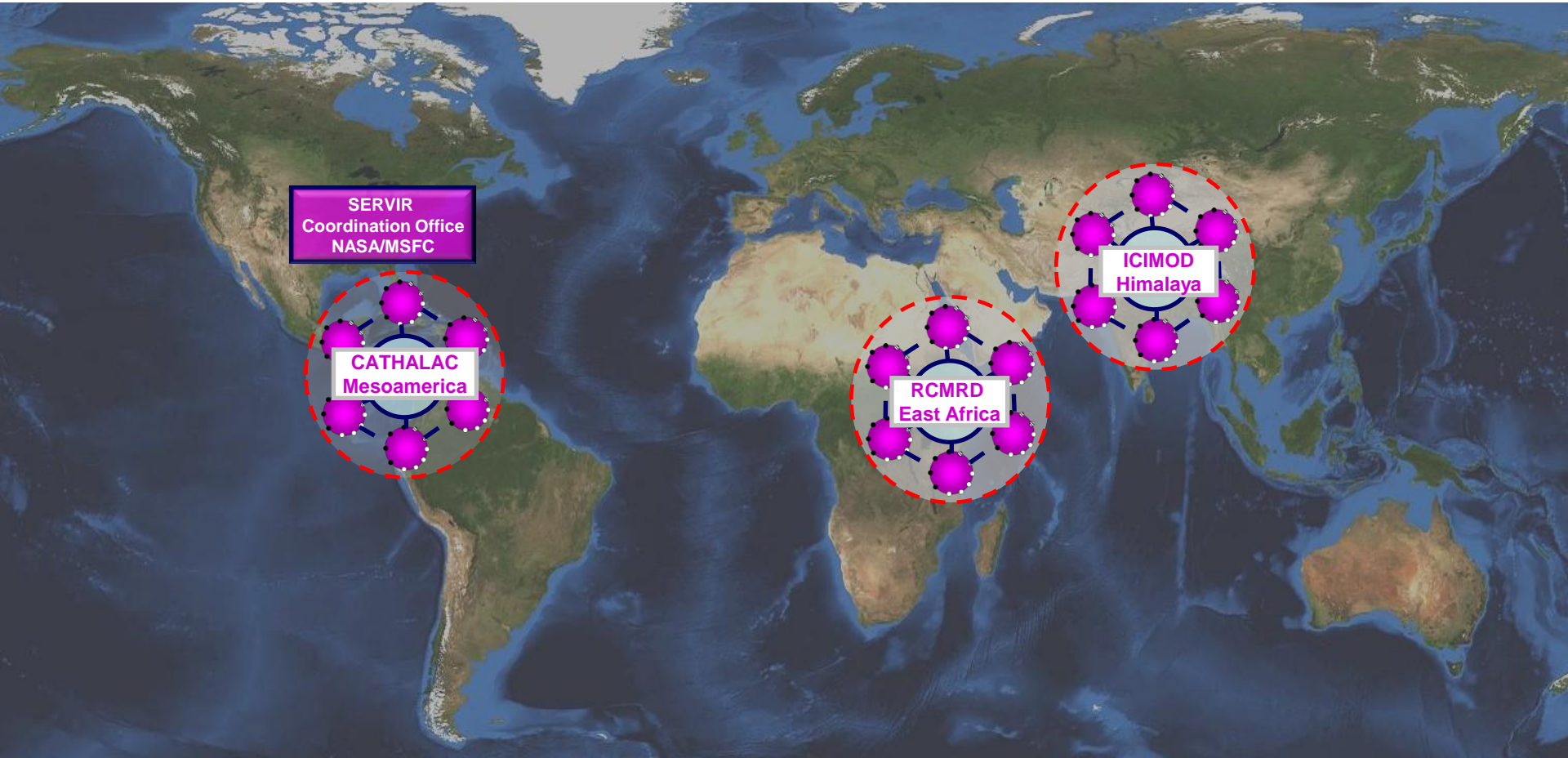


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SERVIR Network



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SERVIR-Mesoamerica @ CATHALAC

City of Knowledge, Panama

Dedicated on February 3, 2005



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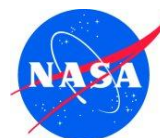
SERVIR-Africa @ RCMRD

Nairobi, Kenya

**Dedicated on
November 21, 2008**



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SERVIR-Himalaya @ ICIMOD

Kathmandu, Nepal

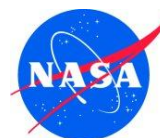
Dedicated on October 5, 2010



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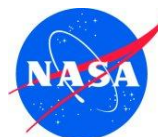
'South-South' Collaboration



Centers are exchanging ideas and sharing experiences



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SERVIR Products and Services

- **SERVIR Geospatial “One Stop”**
- **Capacity Building**
- **Regular Environmental Information**
- **Post-Disaster Earth Observations Analyses**
- **Land Management & REDD+**



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SERVIR “One-Stop”

**SERVIR** Regional Visualization and Monitoring System

Search SERVIR Coordination Office

[SERVIRGlobal.net is in Beta testing](#)

[Home](#) [About](#) [Regions](#) [GEOSS Themes](#) [Interactive Maps](#) [Data Catalog](#) [Training](#) [News](#)

SERVIR » Home



SERVIR Success Stories



What's New on SERVIRGlobal.NET

[Announcement: SERVIR Himalaya Youth Forum in Pakistan \(15 Nov 2011\)](#)

[FOR IMMEDIATE RELEASE: 'Connecting from Space to Village'-enhancing understanding of climate change in the Himalayas \(15 Nov 2011\)](#)

[SERVIR-Himalaya Science Applications to be demonstrated at Bhutan Climate Summit \(15 Nov 2011\)](#)

[Tropical Storm Maria and weather for Central America and the Caribbean, September 2011 \(09 Nov 2011\)](#)



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SERVIR “One-Stop”

The screenshot shows the 'SERVIR-EAST AFRICA' website with the 'Geospatial Catalog' selected. The page title is 'East Africa - Geospatial Catalog'. Below the title, there is a paragraph explaining the catalog's purpose. The main content area is divided into two columns. The left column contains 'Geospatial Catalog Advanced Search Options' with fields for 'Specify 1 or more options below', 'Search Topic(s)', 'Apply To:', 'Time', and 'Location'. The right column displays 'Geospatial Catalog Results (2)' for the search term 'rft'. It shows a list of results with titles like 'Rift Valley fever in Africa and Middle East' and 'Rift Valley fever in Sub-Saharan Africa', each with a brief description and a 'Record Date'. At the bottom, there are logos for USAID, NASA, CIMAC, ICIMOD, GEO, and the Group on Earth Observations, along with a 'Connectivity for SERVIR' logo.


Geospatial Catalog

The screenshot shows the 'SERVIR-EAST AFRICA' website with the 'Interactive Web Maps' selected. The page title is 'East Africa - Interactive Web Maps'. Below the title, there is a paragraph explaining the web mapper's functionality. The main content area features a map of East Africa with various data layers overlaid. On the left, there is a 'Catalog' panel with a list of layers including 'Aggregated GDACS', 'Earthquakes', 'Fires', 'Floods', 'GDACS - Flood Bu', 'GDACS - Flood D', 'Storms', 'Volcanoes', 'Ecosystems', 'Health', 'Infrastructure', 'Weather', and 'TRMM Rainfall'. Below the catalog is a 'Layers Currently in Map' section showing 'Rainfall, Latest 3-Hour Estim' and 'Water Requirements'. On the right, there is a 'Layer Information' panel for 'TRMM Rainfall' showing details like 'Layer Name', 'Layer Type', 'Provider name', and 'Provider url'. At the bottom, there are logos for USAID, NASA, CIMAC, ICIMOD, GEO, and the Group on Earth Observations, along with a 'Connectivity for SERVIR' logo.

Interactive Web Maps



“One Stop” Clip and Ship Tool

**SERVIRBETA.NET**INSTRUCTIONS ▾

Clip, Zip & Ship

Download SERVIR datasets by following the steps below.

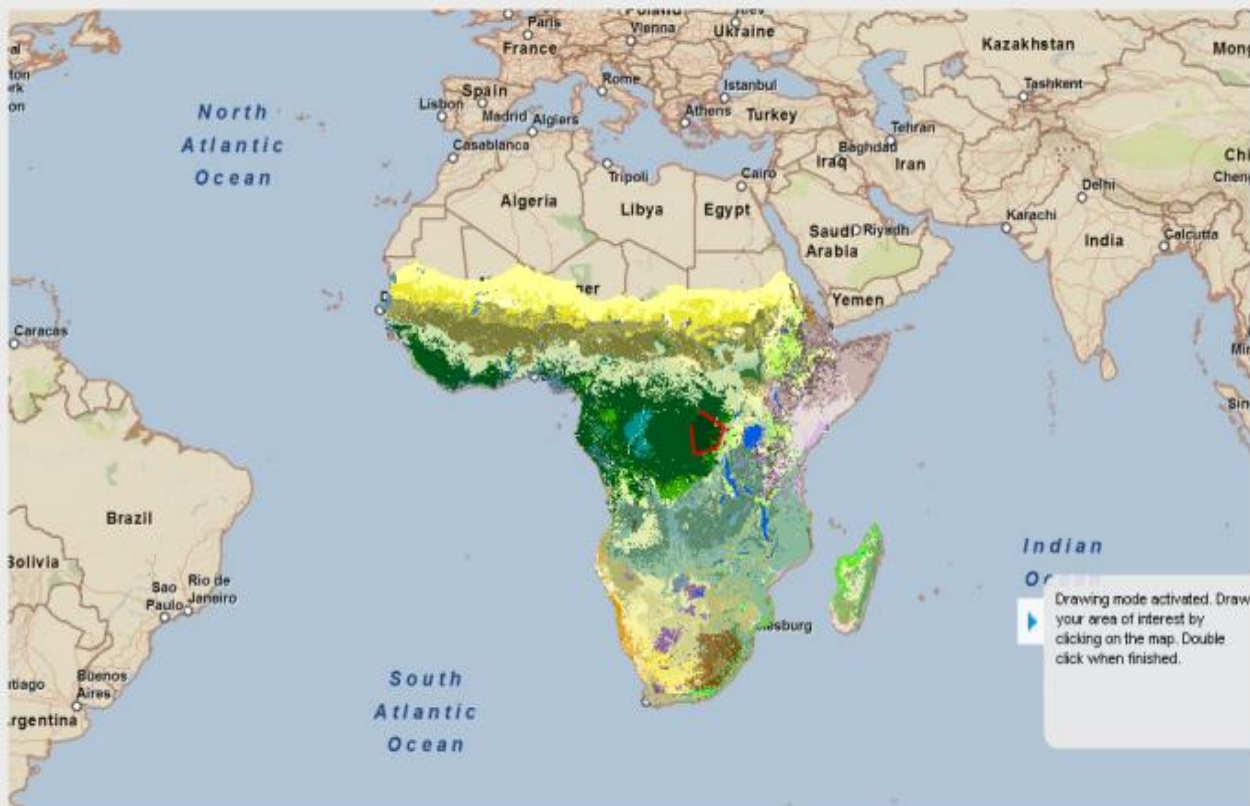
STEP 1: Enter your e-mail address:

STEP 2: Click the button to activate clipping mode.

START DRAWING ON MAP

Map Contents

- ☒ USGS_Ecosystems
 - ☒ Terrestrial Ecosystems
 - ☐ Surficial Lithology
 - ☐ Isobioclimates
 - ☐ Land Surface Forms
 - ☐ Topo Moisture Potential
- ☒ Agriculture
 - ☐ Soil Types
 - ☐ Harvest Plus Farming Systems
 - ☐ Dixon Farming Systems
 - ☐ FAO Soils
 - ☐ FAO Soil Fertility
 - ☐ Pasture
- ☒ Biodiversity



North Atlantic Ocean

South Atlantic Ocean

Indian Ocean

Drawing mode activated. Draw your area of interest by clicking on the map. Double click when finished.



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Earth Observation and Geospatial Capacity Building

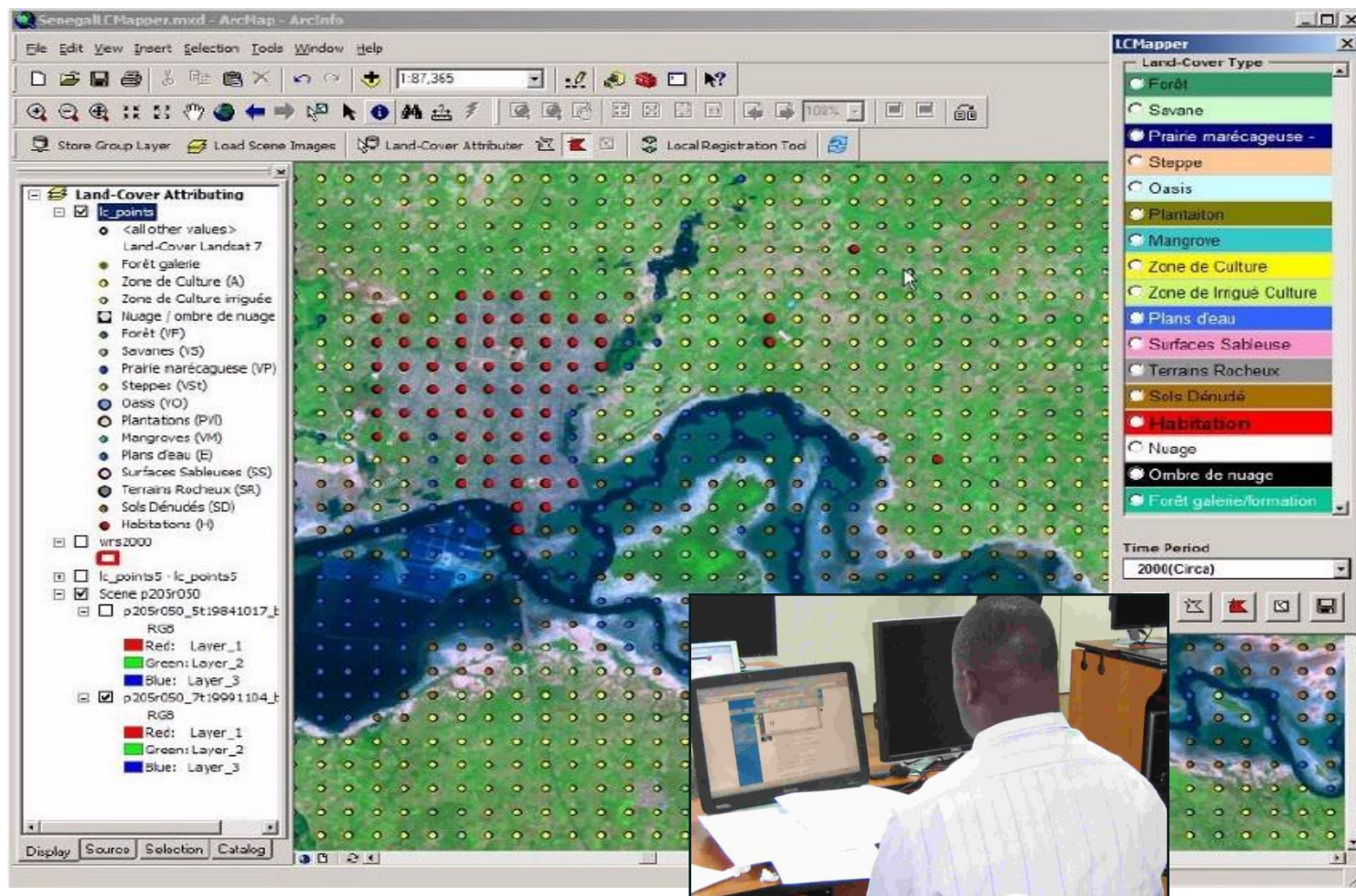


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Rapid Land Cover Mapping Training





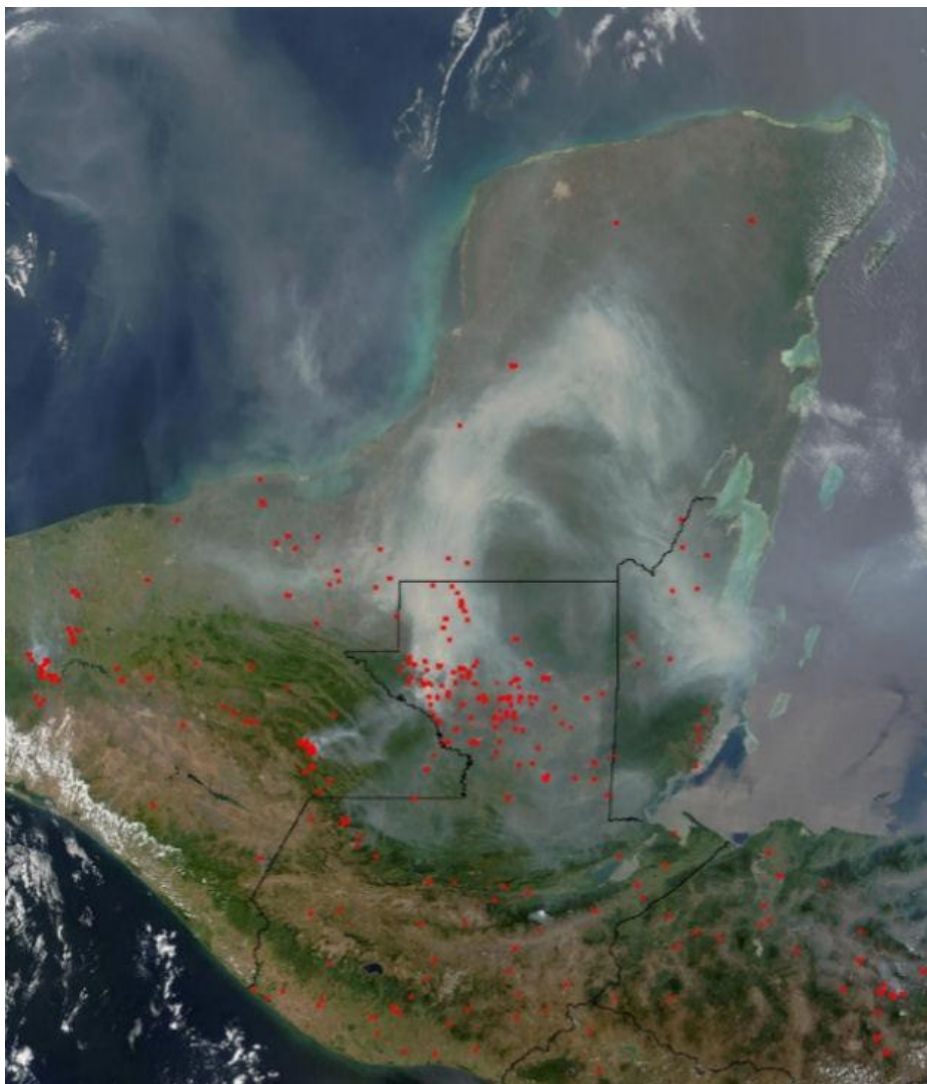
MyCOE-SERVIR Initiative

- Building capacity to protect biodiversity using GIS, RS, and geospatial analytical techniques.
- Strengthening collaboration amongst universities, government environmental authorities, and NGOs.
- Students & mentors competitively selected; both receive modest stipends to conduct 6-month long projects and travel support .





Detecting Fires from Space



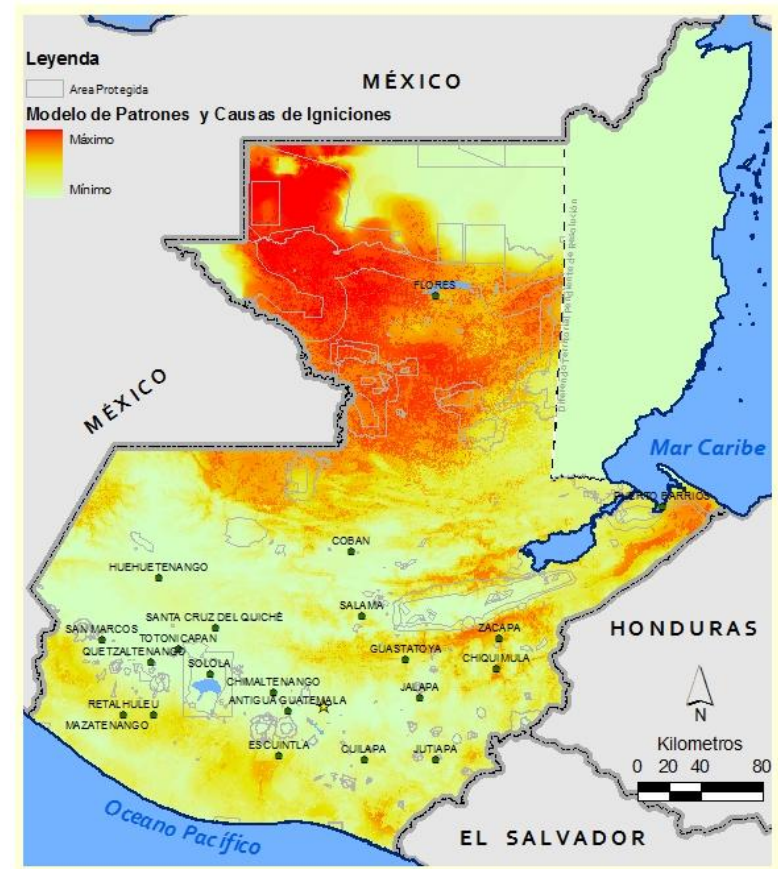
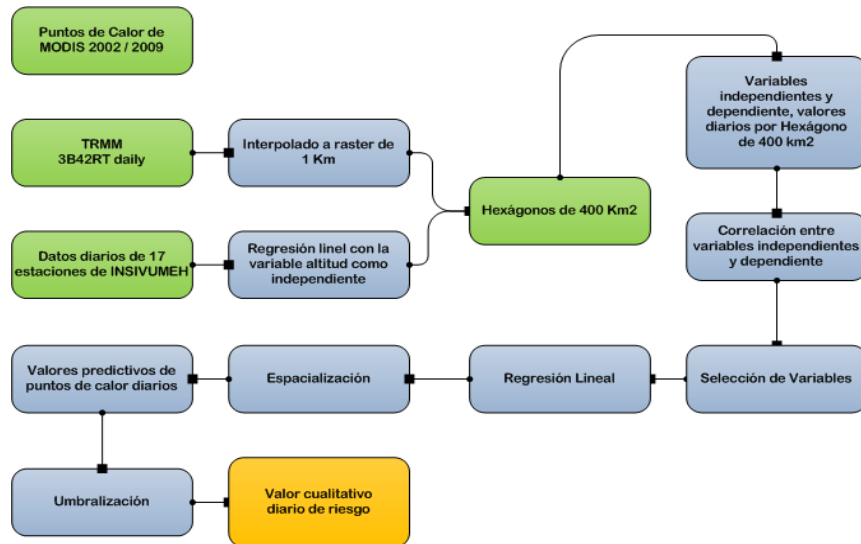
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Guatemala Fire Forecast System

Fire forecasting uses MODIS Rapid Response System, a collaborative effort between GSFC and University of Maryland

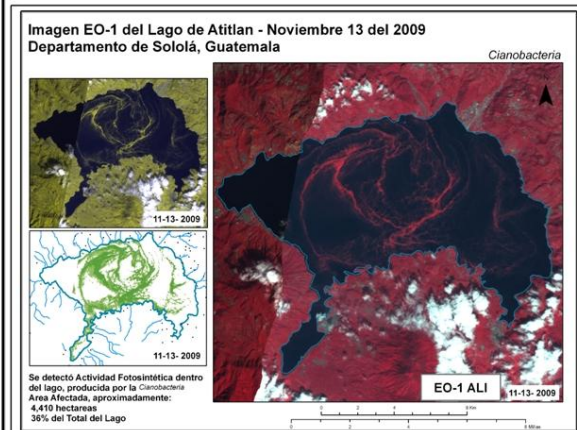
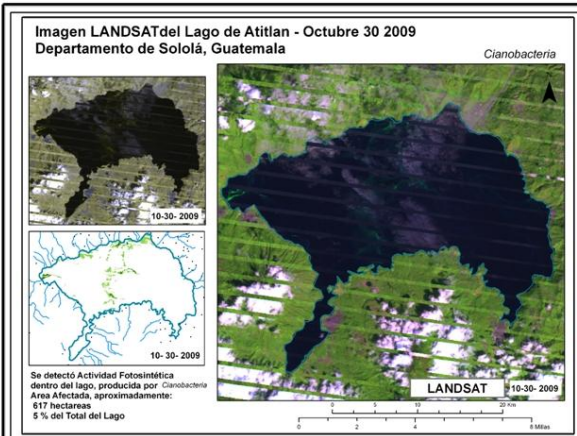


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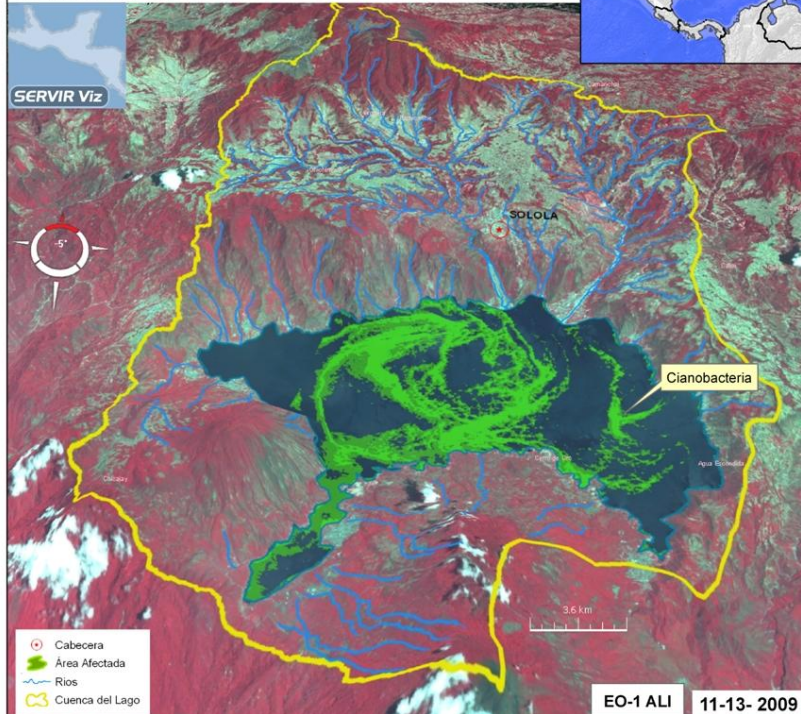
Cyanobacteria Outbreaks



Lago de Atitlán, Departamento de Sololá , Guatemala Área Afectada por *Cianobacteria*

Sistema Hídrico de la
Cuenca Endorreica del Lago de Atitlán

Visualización en SERVIR-VIZ



www.servir.net

Elaborado por CATHALAC, 16 de Noviembre 2009
Crédito de las Imágenes:SERVIR/CATHALAC/NASA/USAID/GEO



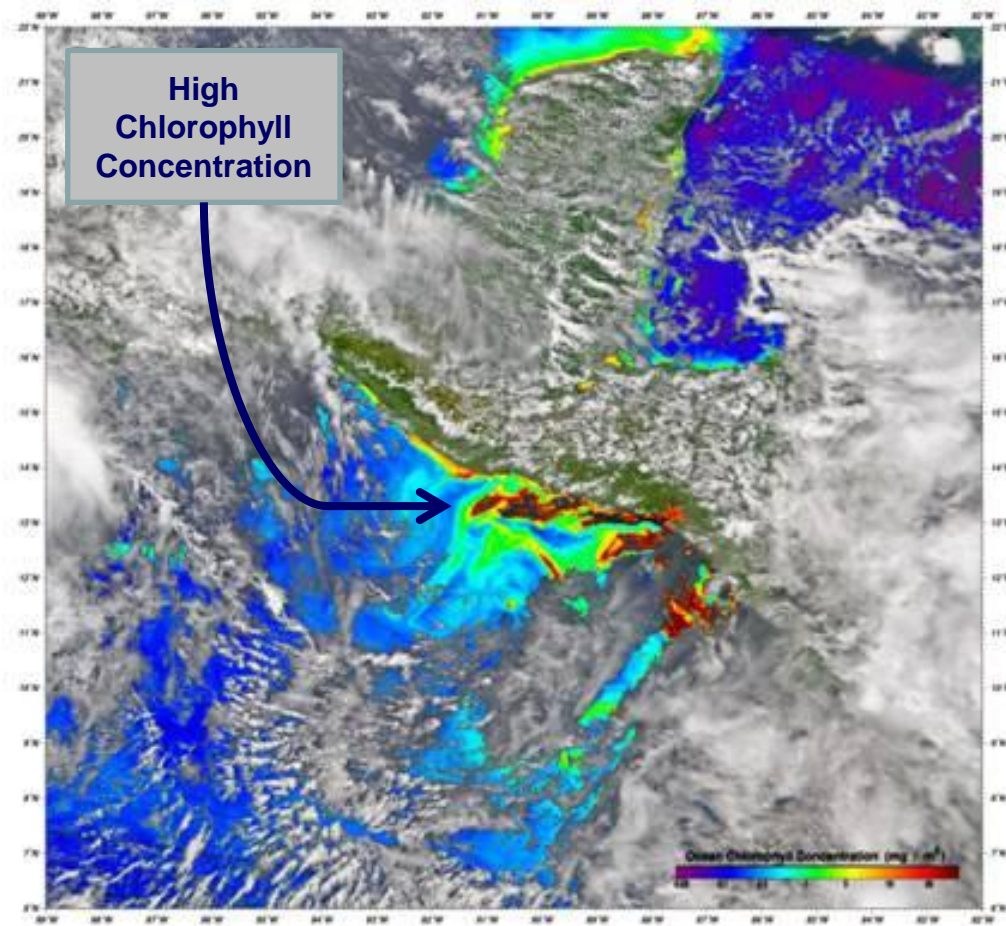
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Harmful Algal Blooms

Real time monitoring of Harmful Algal Blooms (HAB) using
remotely sensed data products

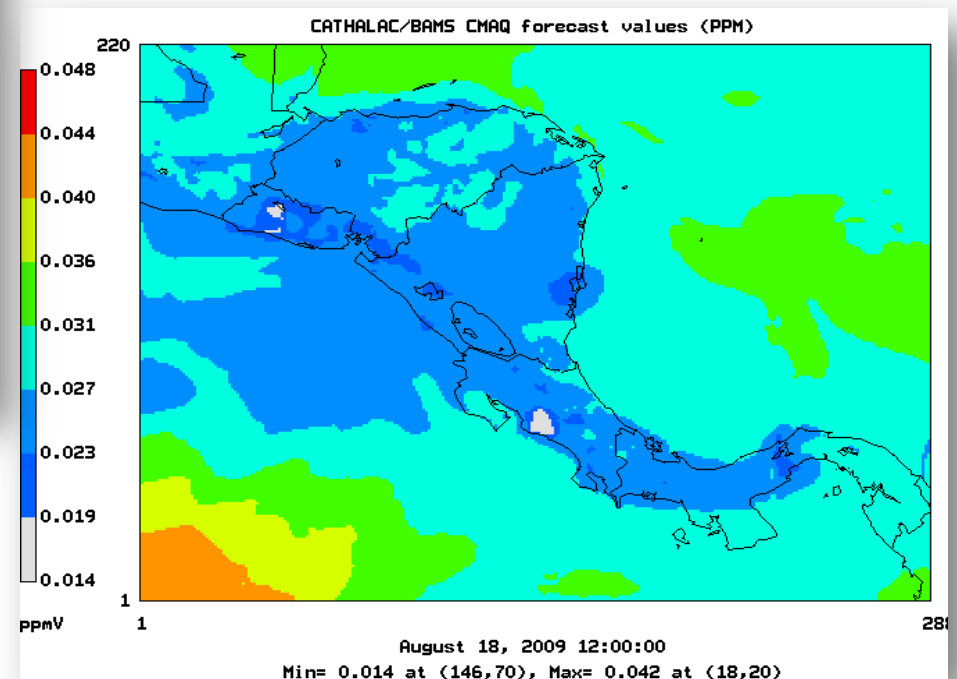
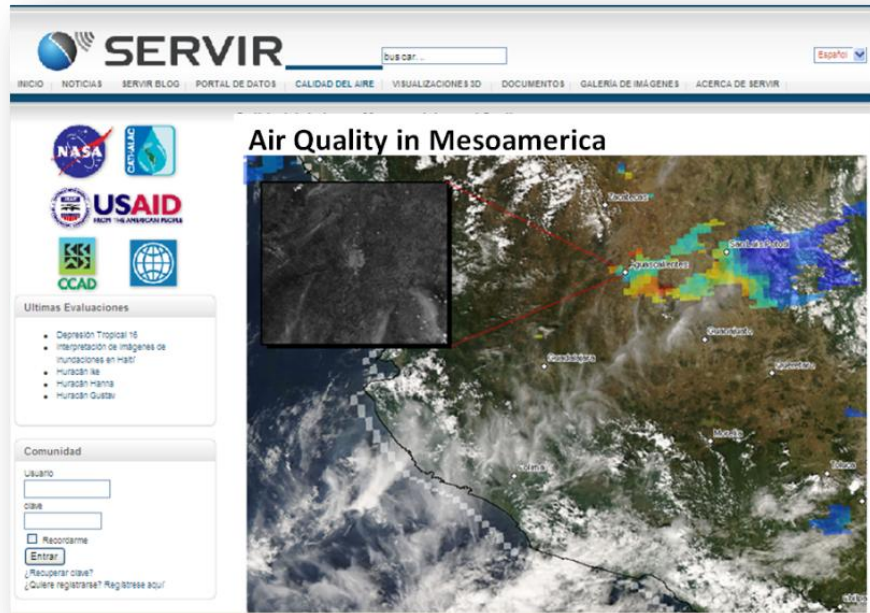


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Air Quality



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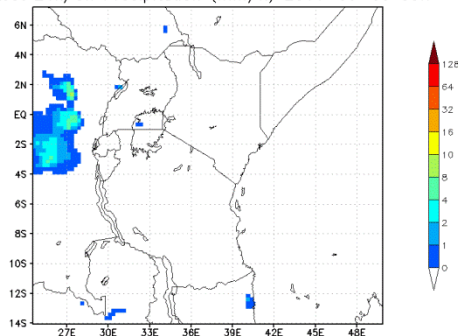




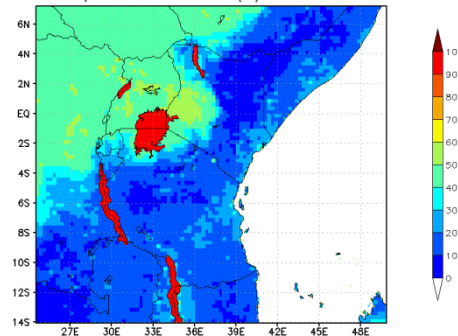
SERVIR Hydrologic Modeling

- Spatially distributed hydrologic model CREST, developed under ROSES-funded NASA/GSFC effort by University of Oklahoma (based on the state of the science Variable Infiltration Capacity (VIC) model).
- Model being run operationally at a spatial resolution of 1km at 3-hr frequency. Output products from CREST are streamflow, soil moisture, actual evapotranspiration.
- Working closely with Kenya Meteorological Department (KMD). We incorporate their near real-time rainfall and temperature forecasts to streamflow and other products. KMD intends to use CREST model products in their simulations.

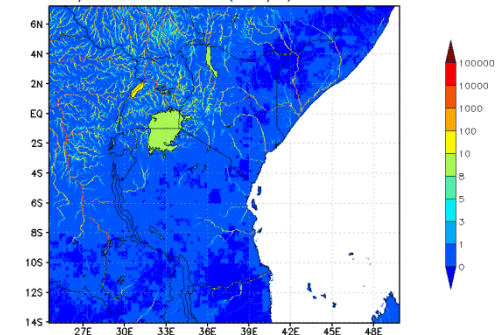
Latest 24h/3h Precipitation (mm/h) 2011-09-09 03h



Latest 24h/3h Soil Moisture (%) 2011-09-09 03h



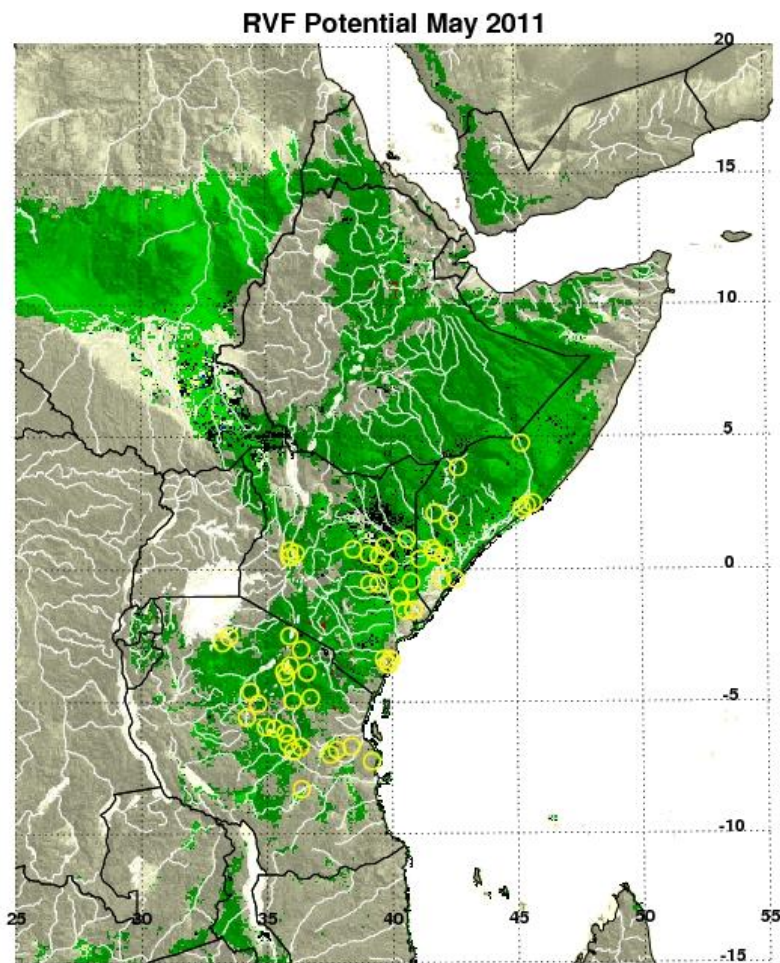
Latest 24h/3h Stream Flow (m³/s) 2011-09-09 03h



KMD East African
Domain



Rift Valley Fever in Africa



Rift Valley Fever Risk Map
(Livestock and human disease transmitted by mosquito)

Uses NDVI, Precipitation and Temperature information

Sensors: MODIS and AVHRR



- RVF risk areas, humans and livestock present
- RVF potential epizootic areas
- RVF risk areas, humans and livestock absent
- 2006-07 RVF Outbreak Sites



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Coral Reef Bleaching Monitoring Tool

Objectives:

- Global database on coral reefs and their status with visualization interface
- Coral reef bleaching monitoring tool and user manual, integrated into SERVIR-Africa portal



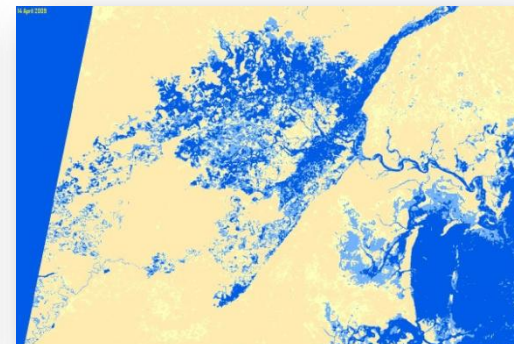
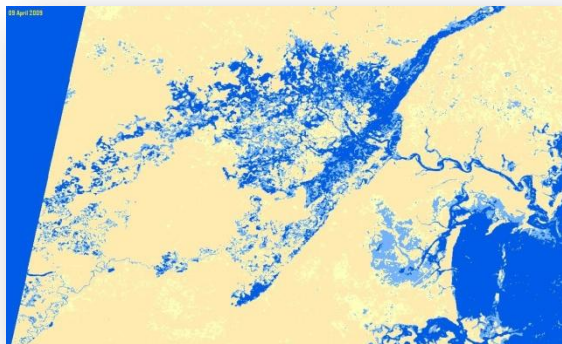
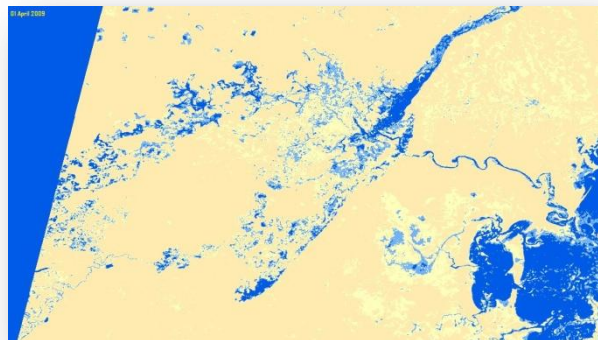
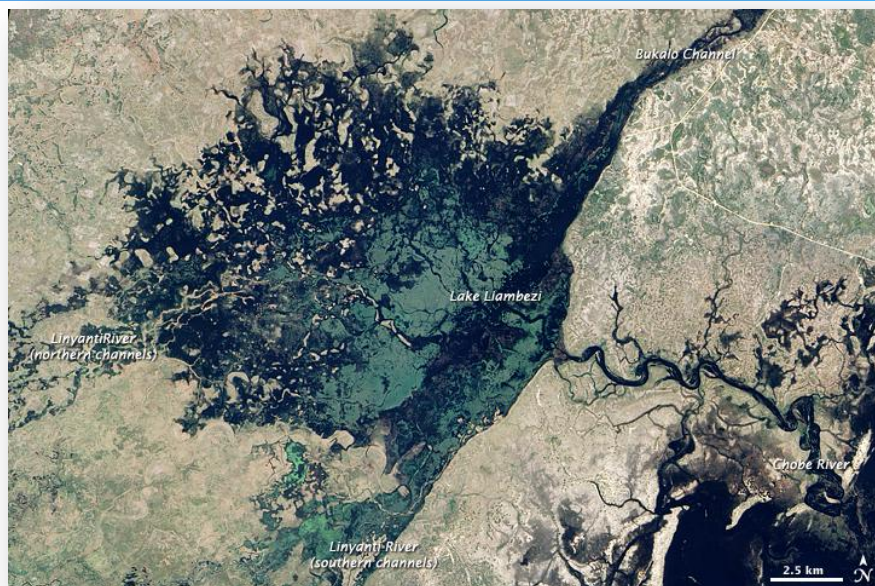
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Mapping Floods in Africa

Lake Liambezi Area



LAKE LIAMBEZI AREA – NASA EO1 BAND 6 SCENES FOR 01, 09 and 14 APRIL 2009
(false colours based on preliminary classification without ground verification)

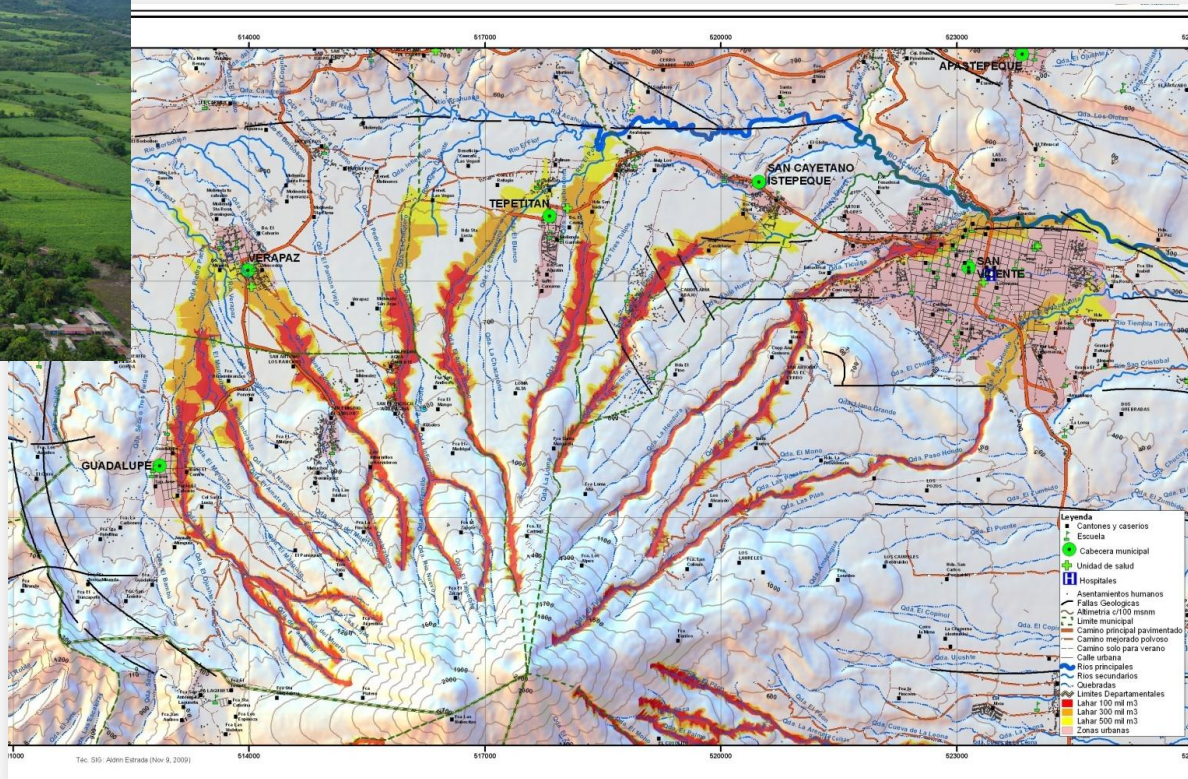


El Salvador Flooding and Debris Flow

November 2009



FORMOSAT
E0-1
ASTER
IKONOS



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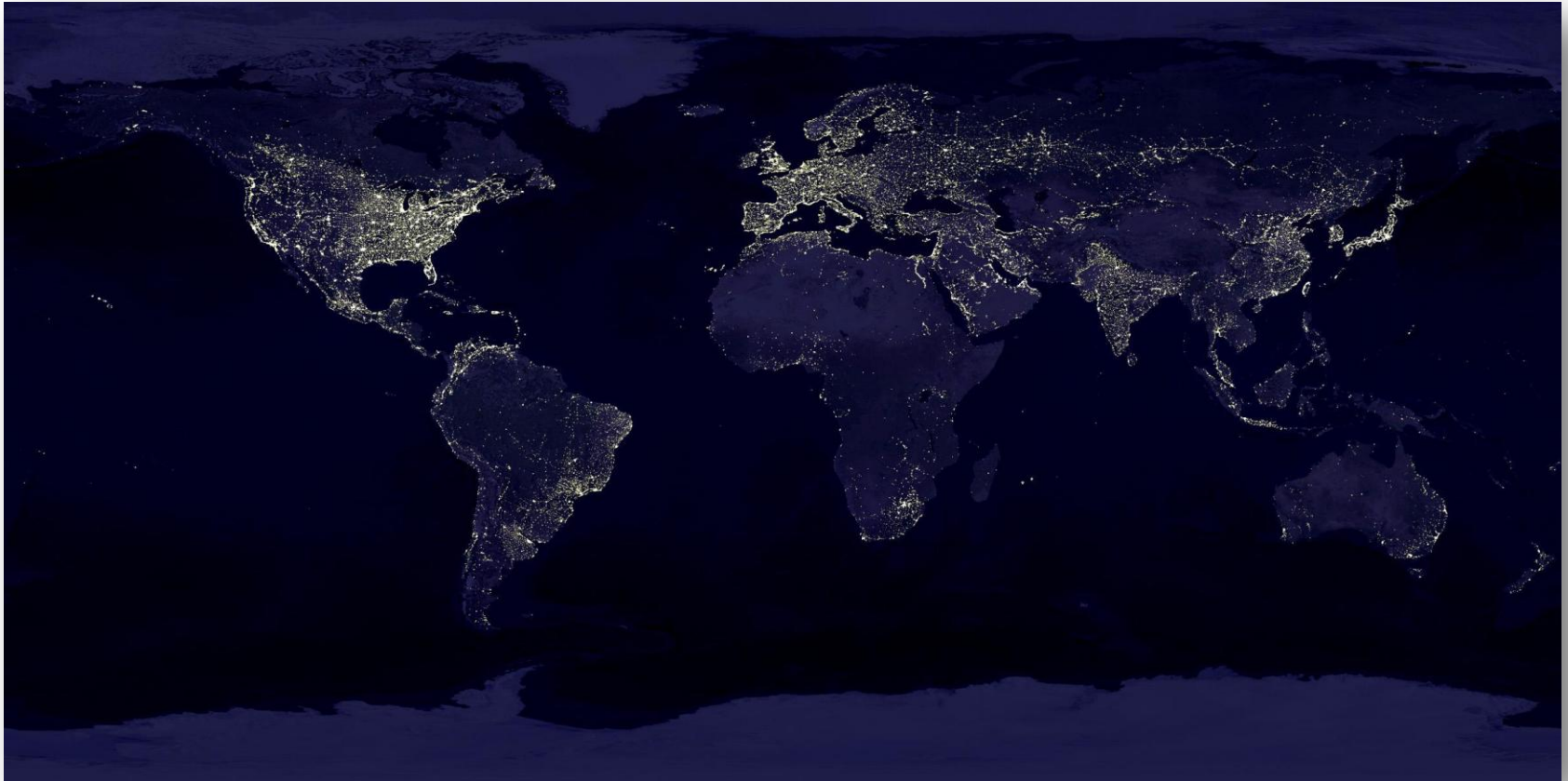


24 August 2010
FL-2010-000111-PAR
Version 1.0





Lights at Night

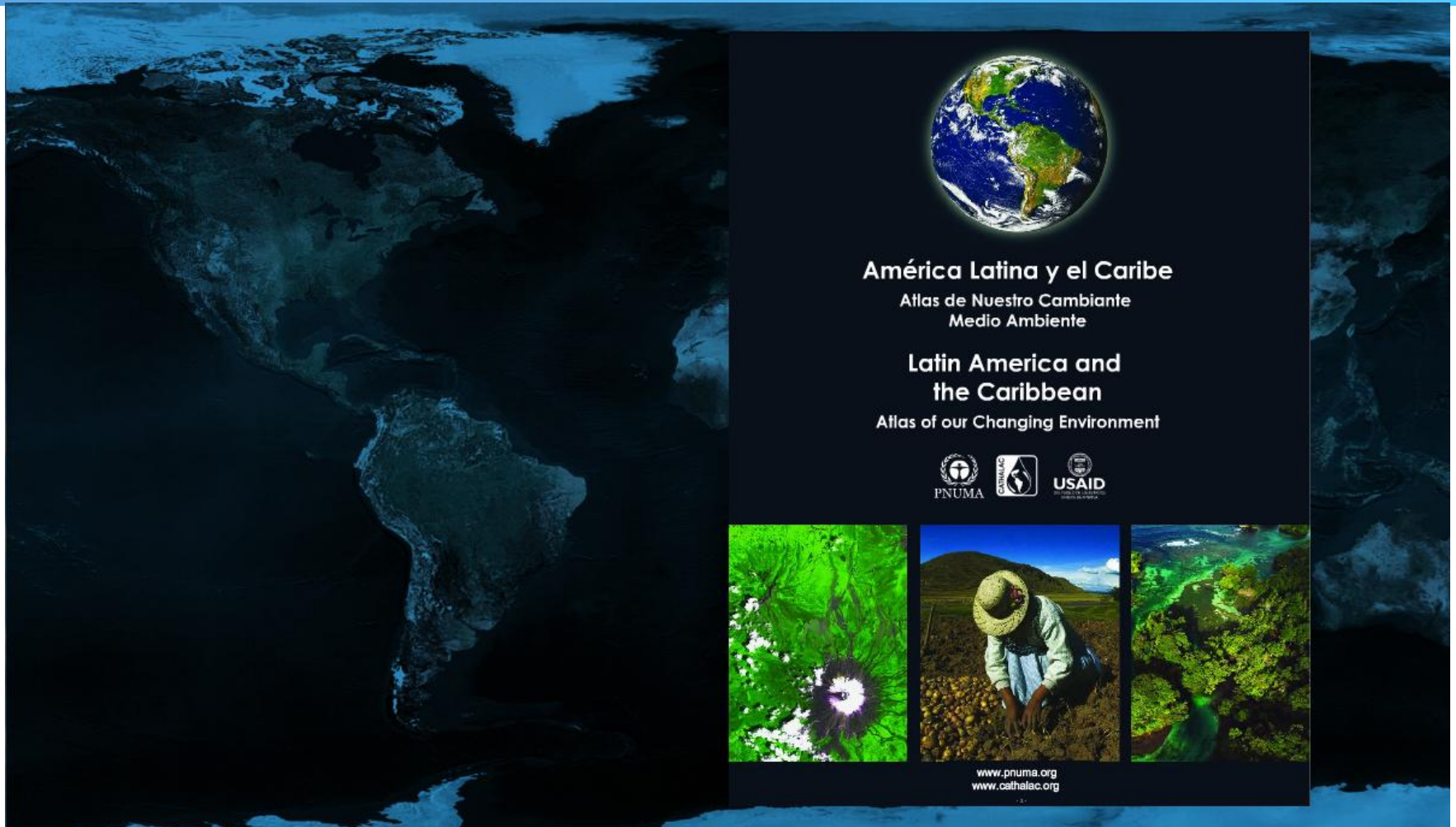


Defense Meteorological Satellite Program (DMSP)
Operational Linescan System



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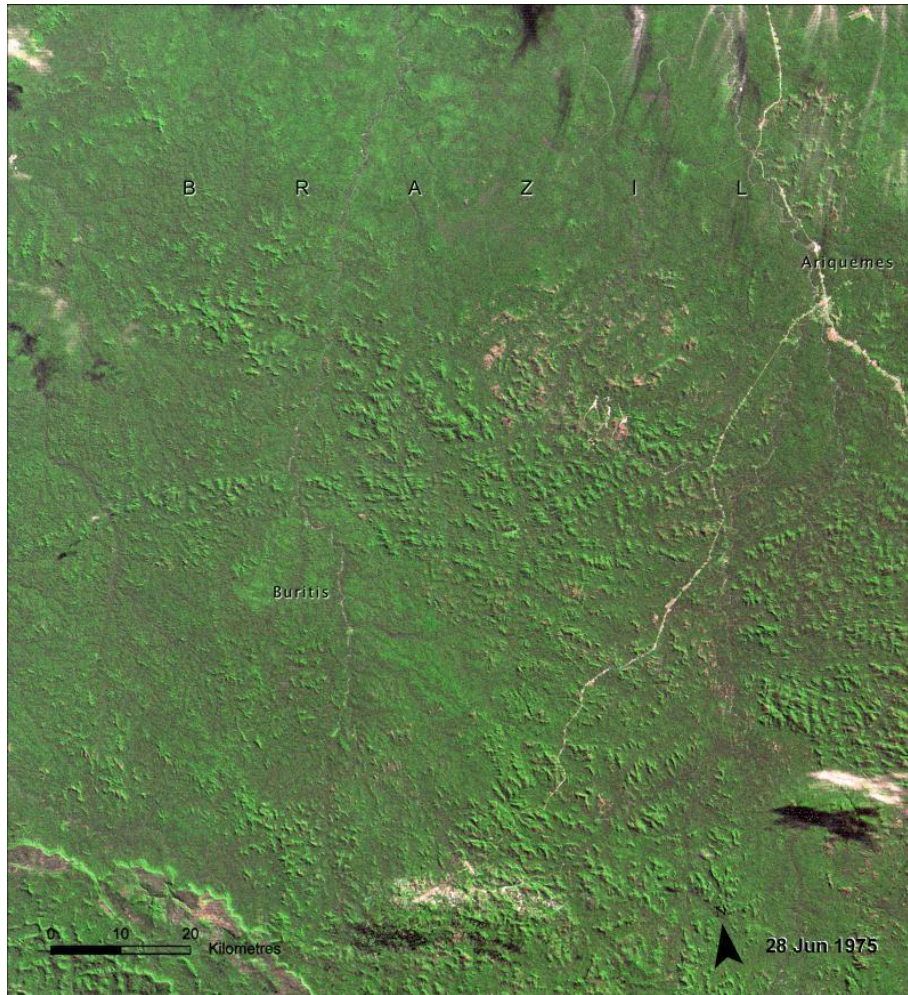


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Rondônia, Brazil (1975 to 2009)



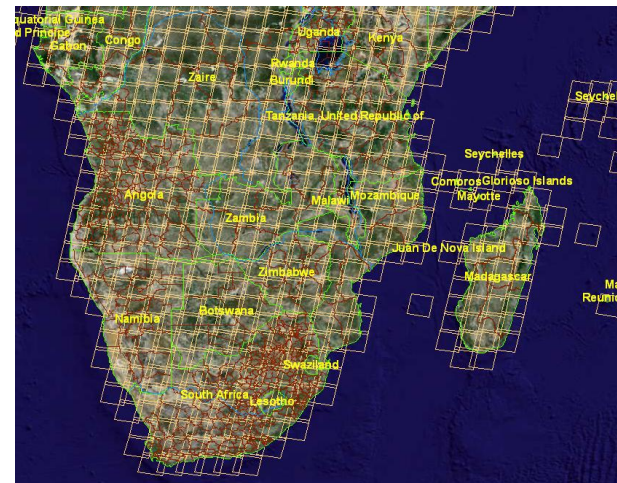
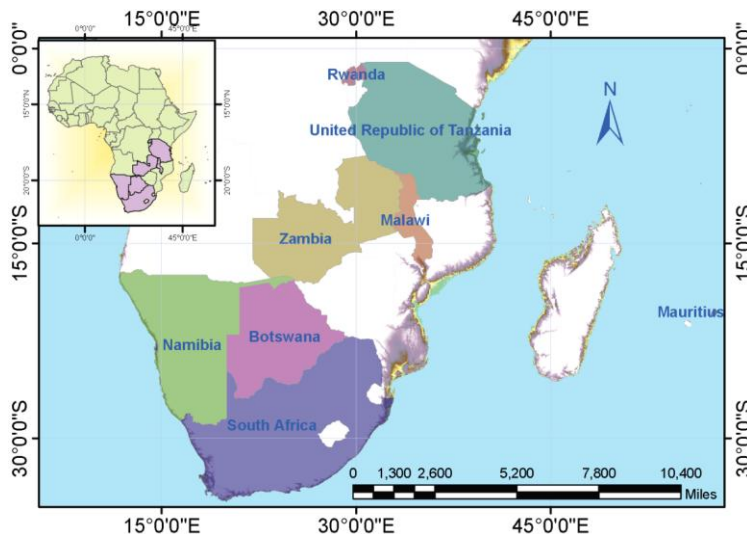
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Land Cover and Land Cover Change for Greenhouse Gas Inventory

- SERVIR is working on providing consistent, reliable, relevant Land Use Land Use change and Forestry (LULUCF) information by harmonizing data compilation at national and regional levels.
- Participating Countries: Botswana, Malawi, Mauritius, Namibia, Rwanda, South Africa, Tanzania, and Zambia
- We are using 30m satellite data for assessing the land cover change maps in 1995, 2000, 2005 and 2010. The land cover change statistics will enable us to quantify the changes in greenhouse gas inventory.

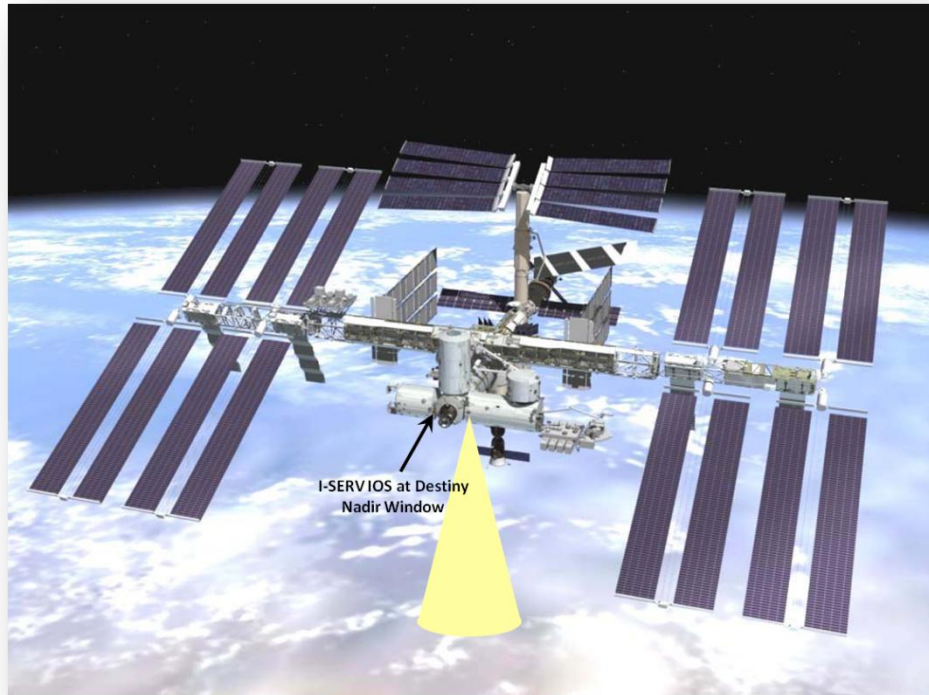


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Space Station Utilization



Disaster



Rainforest Destruction



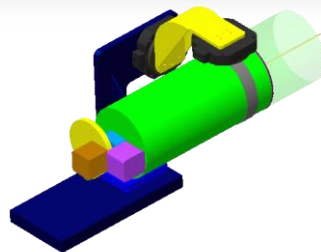
Biomass Estimate



Air Pollution



Agriculture



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